

SEQUENCE LISTING

<110> University of Virginia Patent Foundation

Smith, Jeffrey A.

Lannigan-Macara, Deborah A.

Hecht, Sydney M.

Xu, Yaming

Poteet-Smith, Celeste E.

Brautigan, David L.

<120> Rsk Inhibitors and Therapeutic Uses Thereof

<130> 00789-05

<150> 60/388,006

<151> 2002-06-12

<150> 60/449,553

<151> 2003-02-24

<160> 51

<170> PatentIn version 3.1

<210> 1

<211> 13

<212> PRT

<213> Homo sapiens

<400> 1

Leu Ile Leu Asp Phe Leu Arg Gly Gly Asp Leu Phe Thr

1

5

10

<210> 2

<211> 13

<212> PRT

<213> Homo sapiens

<400> 2

Leu Ile Leu Glu Tyr Leu Ser Gly Gly Glu Leu Phe Met
1 5 10

<210> 3

<211> 11

<212> PRT

<213> Homo sapiens

<400> 3

Arg Arg Arg Leu Ala Ser Thr Asn Asp Lys Gly
1 5 10

<210> 4

<211> 20

<212> PRT

<213> Homo sapiens

<400> 4

Val Ser Val Ser Glu Thr Asp Asp Tyr Ala Glu Ile Ile Asp Glu Glu
1 5 10 15

Asp Thr Phe Thr
20

<210> 5

<211> 21

<212> RNA

<213> Homo sapiens

<400> 5
aagaagcugg acuucagccg u 21

<210> 6
<211> 21
<212> RNA
<213> Homo sapiens

<400> 6
aaccuauggg agaggaggag a 21

<210> 7
<211> 19
<212> RNA
<213> Homo sapiens

<400> 7
aauuauggau gaaccuaug 19

<210> 8
<211> 19
<212> RNA
<213> Homo sapiens

<400> 8
auuauggaug aaccuaugg 19

<210> 9
<211> 19
<212> RNA
<213> Homo sapiens

<400> 9

gcuuuuauGCC augaaggua 19

<210> 10

<211> 19

<212> RNA

<213> Homo sapiens

<400> 10

ggccacacug aaaguucga 19

<210> 11

<211> 19

<212> RNA

<213> Homo sapiens

<400> 11

acgugauauc uugguagag 19

<210> 12

<211> 19

<212> RNA

<213> Homo sapiens

<400> 12

uauCuuggua gagguuaau 19

<210> 13

<211> 19

<212> RNA

<213> Homo sapiens

<400> 13

gauuuuuua cacgcuau 19

<210> 14
<211> 19
<212> RNA
<213> Homo sapiens

<400> 14
uuuguuuaca cgcuuaucc 19

<210> 15
<211> 19
<212> RNA
<213> Homo sapiens

<400> 15
acuugcacuu gcuuuagac 19

<210> 16
<211> 19
<212> RNA
<213> Homo sapiens

<400> 16
ggucacauca aguuaacag 19

<210> 17
<211> 19
<212> RNA
<213> Homo sapiens

<400> 17
aagagucuau ugaccauga 19

<210> 18

<211> 19

<212> RNA

<213> Homo sapiens

<400> 18

agagucuauu gaccaugaa

19

<210> 19
<211> 19
<212> RNA
<213> Homo sapiens

<400> 19
gagucuauug accaugaaa

19

<210> 20
<211> 19
<212> RNA
<213> Homo sapiens

<400> 20
guuaaucguc gaggucaua

19

<210> 21
<211> 19
<212> RNA
<213> Homo sapiens

<400> 21
gugcugacug guggucuuu

19

<210> 22
<211> 19
<212> RNA
<213> Homo sapiens

<400> 22
agcgaaaucc ugcaaacag

19

<210> 23
<211> 19

<212> RNA
 <213> Homo sapiens

 <400> 23
 auccugcaaa cagauuagg 19

 <210> 24
 <211> 19
 <212> RNA
 <213> Homo sapiens

 <400> 24
 uccugcaaac agauuaggu 19

 <210> 25
 <211> 19
 <212> RNA
 <213> Homo sapiens

 <400> 25
 acgauagacu ggaauaaac 19

 <210> 26
 <211> 19
 <212> RNA
 <213> Homo sapiens

 <400> 26
 cgauagacug gaauaaacu 19

 <210> 27
 <211> 19
 <212> RNA
 <213> Homo sapiens

<400> 27
uagacuggaa uaaacugua 19

<210> 28
<211> 19
<212> RNA
<213> Homo sapiens

<400> 28
cuggaauaaa cuguauaga 19

<210> 29
<211> 19
<212> RNA
<213> Homo sapiens

<400> 29
gaugaugaaa gccaaagcua 19

<210> 30
<211> 19
<212> RNA
<213> Homo sapiens

<400> 30
ugaugaaagc caagcuaug 19

<210> 31
<211> 19
<212> RNA
<213> Homo sapiens

<400> 31

gcauccaaac auuaucacu 19

<210> 32

<211> 19

<212> RNA

<213> Homo sapiens

<400> 32

uccaaacauu aucacucua 19

<210> 33

<211> 19

<212> RNA

<213> Homo sapiens

<400> 33

acauuaucac ucuaaagga 19

<210> 34

<211> 19

<212> RNA

<213> Homo sapiens

<400> 34

cauuaucacu cuaaaggau 19

<210> 35

<211> 19

<212> RNA

<213> Homo sapiens

<400> 35

uuaucacucu aaaggaugu 19

<210> 36
<211> 19
<212> RNA
<213> Homo sapiens

<400> 36
ucacucuaaa ggauquaau 19

<210> 37
<211> 19
<212> RNA
<213> Homo sapiens

<400> 37
uguguaugua guaacagaa 19

<210> 38
<211> 19
<212> RNA
<213> Homo sapiens

<400> 38
uguggaugaa ucugguaau 19

<210> 39
<211> 19
<212> RNA
<213> Homo sapiens

<400> 39
ucugguaauc cggaauca 19

<210> 40

<211> 19
<212> RNA
<213> Homo sapiens

<400> 40
aaauggucuu cucaugacu

19

<210>	41	
<211>	19	
<212>	RNA	
<213>	Homo sapiens	
<400>	41	
caaugcuuac	cgguuacac	19
<210>	42	
<211>	19	
<212>	RNA	
<213>	Homo sapiens	
<400>	42	
ccgguuacac	uccauuugc	19
<210>	43	
<211>	19	
<212>	RNA	
<213>	Homo sapiens	
<400>	43	
gagacugacu	gcugcucuu	19
<210>	44	
<211>	19	
<212>	RNA	
<213>	Homo sapiens	
<400>	44	
ccaacugcca	caauaccaa	19
<210>	45	
<211>	19	

<212> RNA
 <213> Homo sapiens

 <400> 45
 ugcaccacau cuaguaaag 19

 <210> 46
 <211> 19
 <212> RNA
 <213> Homo sapiens

 <400> 46
 uucugcuuug aaccguaau 19

 <210> 47
 <211> 19
 <212> RNA
 <213> Homo sapiens

 <400> 47
 ccguaaucag ucaccaguu 19

 <210> 48
 <211> 3206
 <212> DNA
 <213> homo sapiens

 <400> 48
 ctggtgactc gcggcggcgg cggcggacgg cccagccgga gcgcgagggg ctcggggggg 60
 cgcggcggtt cggtcgcag agccaggac cccaggaccc gggaggcggc gcagccgggg 120
 ccgccggagg agcgcggtg acctggcggc ggcgagatgc cgctcgcca gctcaaggag 180
 ccctggccgc tcatggagct agtgccgctg gacccggaga atggacagac ctcaggggaa 240

gaagctggac ttcagccgtc caaggatgag ggcgtcctca aggagatctc catcacgcac	300
cacgtcaagg ctggctctga gaaggctgat ccatcccatt tcgagctcct caaggttctg	360
ggccagggat cctttggcaa agtcttcctg gtgcggaaag tcacccggcc tgacagtggg	420
cacctgtatg ctatgaaggt gctgaagaag gcaacgctga aagtacgtga ccgcgtccgg	480
accaagatgg agagagacat cctggctgat gtaaatacacc cattcgtggt gaagctgcac	540
tatgccttcc agaccgaggg caagctctat ctattcttg acttcctgcg tggtagggac	600
ctcttcaccc ggctctcaaa agaggatgatg ttcacggagg aggatgtgaa gttttacctg	660
gccgagctgg ctctgggctt ggatcacctg cacagcctgg gtatcattta cagagacctc	720
aagcctgaga acatccttct ggatgaggag ggccacatca aactcactga ctttggcctg	780
agcaaagagg ccattgacca cgagaagaag gcctattctt tctgcgggac agtggagtac	840
atggcccctg aggtcgtcaa ccgccagggc cactcccata gtgcggactg gtggtcctat	900
ggggtgttga tgtttgagat gctgacgggc tccctgccct tccaggggaa ggaccggaag	960
gagaccatga cactgattct gaaggcgaag ctaggcatgc cccagtttct gagcactgaa	1020
gccagagacc tcttgcgggc cctgttcaag cggaatcctg ccaaccggct cggctccggc	1080
cctgatgggg cagaggaaat caagcggcat gtcttctact ccaccattga ctggaataag	1140
ctataccgtc gtgagatcaa gccacccttc aagccagcag tggctcagcc tgatgacacc	1200
ttctactttg acaccgagtt cacgtccgc acaccaagg attccccagg catccccccc	1260
agcgtgggg cccatcagct gttccggggc ttcagcttcg tggccaccgg cctgatggaa	1320
gacgacggca agcctcgtgc cccgcaggca cccctgcact cggtaggtaca gcaactccat	1380

gggaagaacc	tggttttttag	tgacgggtac	gtggtaaagg	agacaattgg	tgtgggctcc	1440
tactctgagt	gcaagcgctg	tgtccacaag	gccaccaaca	tggagtatgc	tgtcaaggtc	1500
attgataaga	gcaagcgggg	tccttcagaa	gagattgaga	ttcttctgcg	gtatggccag	1560
cacccaaca	tcatactct	gaaagatgtg	tatgatgatg	gcaaacacgt	gtacctggtg	1620
acagagctga	tgcggggtg	ggagctgctg	gacaagatcc	tgcggcagaa	gttcttctca	1680
gagcgggagg	ccagctttgt	cctgcacacc	attggcaaaa	ctgtggagta	tctgcactca	1740
caggggggtg	tgcacaggga	cctgaagccc	agcaacatcc	tgtatgtgga	cgagtccggg	1800
aatcccgagt	gcctgcgc	catctgtgact	tttggcca	aacagctg	cggtgagaat	1860
gggctcctca	tgacaccttg	ctacacagcc	aactttgtg	gcctgaggt	gctgaagcgc	1920
cagggctacg	atgaaggctg	cgacatctgg	agcctgggca	ttctgctgta	caccatgctg	1980
gcaggatata	ctccatttgc	caacgggtccc	agtgcacac	cagaggaaat	cctaaccggg	2040
atcggcagtg	ggaagtttac	cctcagtggg	ggaaattgga	acacagtttc	agagacagcc	2100
aaggacctgg	tgtccaagat	gctacacgtg	gatccccacc	agcgctcac	agctaagcag	2160
gttctgcagc	atccatgggt	caccagaaa	gacaagcttc	cccaaagcca	gctgtccac	2220
caggacctac	agcttgtaa	gggagccatg	gctgccacgt	actccgcact	caacagctcc	2280
aagccacccc	cccagctgaa	gcccacgag	tcatccatcc	tggcccagcg	gcgagtgagg	2340
aagttgccat	ccaccacct	gtgaggcacc	agggcattcg	ggccacaggg	cggtgctagc	2400
ttgacagagt	cagcatgctt	cccagaggga	gcaggccgga	accacagggc	cagagggagc	2460
tggaacccga	ggggccgggg	aagctgccag	cccagaacac	ccctaattgag	ggtgtgagaa	2520

gtgccttctc cttccccagg atggactcct ctcggctcag gctctgctgg tggaaagcga	2580
ttcactgtat aaactttttt ttatgaaaaa aatggcatca accaccatgg atttttacaa	2640
gatccatttg cttttctggg agcagaaaca gccattgcgg cccaggagg ggaactgagt	2700
cacgctgggg ctctctgaga ctcttttagag cagctttggg atcccaccct ggggaccccc	2760
atgattggcc acctgtagcc atctgcacac acctccgaga cagtccagtg tcacctctct	2820
cagagcatct ggctgtttag cagaactcat tctatcccca atcagctcct tttccgttct	2880
gttctgctgg gagttctaga accacttcct gctacaggag gggctctcatg tctgctggc	2940
ttccagcttc aggcaccagc atccaccttg gctctgccag tggatcccct gcggtcaggc	3000
tgggcagccc cagagagagg atgtggaaag cacttttttg ctgacttcat ctggggttgg	3060
caacaggaca gagttcacag gaggccagtg ggcgggcat gagggacagg gtcttttttc	3120
atttcttct cagctgggta ctcagggttc atctgtccat ggcctttcta ataaactgtt	3180
gagttgaaaa aaaaaaaaaa aaaaaa	3206

<210> 49

<211> 2260

<212> DNA

<213> homo sapiens

<400> 49

atgccgctgg cgcagctggc ggacccgtgg cagaagatgg ctgtggagag cccgtccgac	60
agcgctgaga atggacagca aattatggat gaacctatgg gagaggagga gattaacca	120
caaactgaag aagtcagtat caaagaaatt gcaatcacac atcatgtaaa ggaaggacat	180

gaaaaggcag atccttccca gtttgaactt ttaaaagtat tagggcaggg atcatttga	240
aagggtttct tagttaaaaa aatctcaggc tctgatgcta ggcagcttta tgccatgaag	300
gtattgaaga aggccacact gaaagttcga gaccgagttc ggacaaaaat ggaacgtgat	360
atcttggtag aggttaatca tccttttatt gtcaagttgc attatgcttt tcaaactgaa	420
gggaagttgt atcttatttt ggattttctc aggggaggag atttgtttac acgcttatcc	480
aaagaggtga tgttcacaga agaagatgtc aaattctact tggctgaact tgcacttget	540
ttagaccatc tacatagcct gggaataatt tatagagact taaaaccaga aaatatactt	600
cttgatgaag aaggtcacat caagttaaca gatttcggcc taagtaaaga gtctattgac	660
catgaaaaga aggcataattc tttttgtgga actgtggagt atatggctcc agaagtagtt	720
aatcgtcgag gtcataactca gagtgtgac tgggtgtctt ttggtgtgtt aatgtttgaa	780
atgcttactg gtacactccc tttccaagga aaagatcgaa aagaaacaat gactatgatt	840
cttaaagcca aacttggaaat gccacagttt ttgagtcctg aagcgagag tcttttacga	900
atgcttttca agcgaaatcc tgcaaacaga ttaggtgcag gaccagatgg agttgaagaa	960
attaaaagac attcattttt ctcaacgata gactggaata aactgtatag aagagaaatt	1020
catccgcat ttaaacctgc aacgggcagg cctgaagata cattctattt tgatcctgag	1080
tttactgcaa aaactcccaa agattcacct ggcattccac ctagtgctaa tgcacatcag	1140
ctttttcggg ggtttagttt tgttgctatt acctcagatg atgaaagcca agctatgcag	1200
acagttggtg tacattcaat tgttcagcag ttacacagga acagtattca gtttactgat	1260
ggatatgaag taaaagaaga tattggagtt ggctcctact ctgtttgcaa gagatgtata	1320

cataaagcta caaacatgga gtttgcagtg aagattattg ataaaagcaa gagagacca	1380
acagaagaaa ttgaaattct tcttcgttat ggacagcatc caaacattat cactctaaag	1440
gatgtatatg atgatggaaa gtatgtgtat gtagtaacag aacttatgaa aggaggtgaa	1500
ttgctggata aaattccttag acaaaaattt ttctctgaac gagaggccag tgctgtcctg	1560
ttcactataa ctaaaaccgt tgaatatctt cacgcacaag ggttggttca tcgagacttg	1620
aaacctagca acattcttta tgtggatgaa tctggtaatc cggaatctat tcgaatttgt	1680
gattttggct ttgcaaaaca gctgagagcg gaaaatggtc ttctcatgac tccttggtac	1740
actgcaaatt ttgttgcacc agaggtttta aaaagacaag gctatgatgc tgcttgtgat	1800
atatggagtc ttggtgtcct actctataca atgcttaccg gttacactcc atttgcaaat	1860
ggtcctgatg atacaccaga ggaaatattg gcacgaatag gtagcggaaa attctcactc	1920
agtggtggtt actggaattc tgtttcagac acagcaaagg acctggtgtc aaagatgctt	1980
catgtagacc ctcatcagag actgactgct gctcttgtgc tcagacatcc ttggatcgtc	2040
cactgggacc aactgccaca ataccaacta aacagacagg atgcaccaca tctagtaaag	2100
ggtgccatgg cagctacata ttctgctttg aaccgtaatc agtcaccagt tttggaacca	2160
gtaggccgct ctactcttgc tcagcggaga ggtattaaaa aaatcacctc aacagccctg	2220
tgaagtgacc tcagtgagat atttgatcc atggtgtaaa	2260

<210> 50

<211> 3982

<212> DNA

<213> homo sapiens

<400> 50

ggcacgaggc ggagaaggag gcggagggag cgattgtggc cccggccgcg gtggccggcg	60
cggcctgccc tttgtgaccg cagctcgcgc cccacgcccc gcgcccattg ccgccgtgcc	120
gggctccctg gccacgcgtg cccgcccgcg gacctgagcc ccgcgcctgg gatgccgggg	180
atgcgcgtcc cccggccctg cggctgctcc gggctgggcg cggggcgatg gacctgagca	240
tgaagaagtt cgccgtgcgc aggttcttct ctgtgtacct gcgcaggaag tcgcgctcca	300
agagctccag cctgagccgg ctcgaggaag aaggtgtcgt gaaggagata gacatcagcc	360
atcatgtgaa ggagggcttt gagaaggcag atccttccca gtttgagctg ctgaaggttt	420
taggacaagg atcctatgga aaggtgttcc tggtaggaa ggtgaagggg tccgacgtg	480
ggcagctcta cgccatgaag gtccttaaga aagccaccct aaaagttcgg gaccgagtga	540
gatcgaagat ggagagagac atcttggcag aagtgaatca ccccttcatt gtgaagcttc	600
attatgcctt tcagacggaa ggaaagctct acctgatcct ggacttcctg cggggagggg	660
acctcttcac ccggctctcc aaagaggta tgttcacgga ggaggatgtc aagttctacc	720
tggctgagct ggccttggct ttagaccatc tccacagcct ggggatcatc tacagagatc	780
tgaagcctga gaacatcctc ctggatgaag aggggcacat taagatcaca gatttcggcc	840
tgagtaagga ggccattgac cacgacaaga gagcgtactc cttctgcggg acgatcgagt	900
acatggcgcc cgaggtgggtg aaccggcgag gacacacgca gagtgccgac tgggtgtcct	960
tcggcgtgct catgtttgag atgctcacgg ggtccctgcc gttccagggg aaggacagga	1020
aggagaccat ggctctcatc ctcaaagcca agctggggat gccgcagttc ctcagtgggg	1080
aggcacagag tttgctgcga gctctcttca aacggaaccc ctgcaaccgg ctgggtgctg	1140

gcattgacgg agtggaggaa attaagcgcc atcccttctt tgtgaccata gactggaaca	1200
cgctgtaccg gaaggagatc aagccaccgt tcaaaccagc agtgggcagg cctgaggaca	1260
ccttccactt tgaccccgag ttcacagcgc ggacgcccac agactctcct ggcgtccccc	1320
cgagtgcaaa cgctcatcac ctgttttagag gattcagctt tgtggcctca agcctgatcc	1380
aggagccctc acagcaagat ctgcacaaaag tcccagttca cccaatcgtg cagcagttac	1440
acgggaacaa catccacttc accgatggct acgagatcaa ggaggacatc ggggtgggct	1500
cctactcagt gtgcaagcga tgtgtgcata aagccacaga caccgagtat gccgtgaaga	1560
tcattgataa gagcaagaga gaccctcgcg aagagattga gatcctcctg cggtagcgcc	1620
agcacccgaa catcatcacc ctcaaggatg tctatgatga tggcaagttt gtgtacctgg	1680
taatggagct gatgcgtggg ggggagctcc tggaccgcat cctccggcag agatacttct	1740
cggagcgcga agccagtgc gtcctgtgca ccatcaccaa gaccatggac tacctccatt	1800
cccagggggg tgttcatcga gacctgaagc cgagtaacat cctgtacagg gatgagtcgg	1860
ggagcccaga atccatccga gtctgcgact tcggctttgc caagcagctg cgcgcgggga	1920
acgggctgct catgacaccc tgctacacgg ccaatttcgt ggccccggag gtcctgaagc	1980
gtcaaggcta tgatgcggcg tgtgacatct ggagtttggg gatcctgttg tacaccatgc	2040
tggcaggatt taccctttt gcaaatgggc cagacgatac ccctgaggag attctggcgc	2100
ggatcggcag tgggaagtat gccctttctg ggggaaactg ggactcgata tctgacgcag	2160
ctaaagacgt cgtgtccaag atgctccacg tggaccctca tcagcgctg acggcgatgc	2220
aagtgctcaa acaccctgg gtggtcaaca gagagtacct gtccccaaac cagctcagcc	2280

gacaggacgt gcacctggtg aagggcgcgga tggccgccac ctactttgct ctaaacagaa	2340
cacctcaggc cccgcggctg gagcccgctg tgcgtccaa cctggctcag cgcagaggca	2400
tgaagagact cacgtccacg cggttgtagc ggggtgggacc ctggccccag cgtcccctgc	2460
cagcatcctc gtggggtcac agacccccggc ctcgagagccc gtctggcacc cagagtgacc	2520
acaagtccag cagggaggcg gcgccccgcc tcgccgtgtc cgtgttttct ttttcagccc	2580
cggagagggg cctgacctgg gggcttctcc aagcctcact gcgccagcct cccgccccgc	2640
tctcttttct cccaagcaaa accaaatgcg ccccttcacc tcgcgtgccc gtgcgaggcc	2700
gggggcttct ttcagagccc gcgggtcctc tcatacatgg cttctgtttc tgccgagaga	2760
tctgttttcc aattatgaag ccggtcgggtt tggtcagact cccgacaccc acgtcccagg	2820
tacctgggtg gaaagtggca gtgcgagggc gcagccattg gtggttgag ggccccagag	2880
ggctgggggtg acctggcatc ccggggctcc ccacgggctg gatgacgggg ttggcactgt	2940
ggcgtccagg aggagatgcc tggttctgcc caaaataatc caaagagccg tttcctcctc	3000
gcccttcagt ttttgctga ggtgctgggt agcccatcct ttcctctgtc ccagattcaa	3060
atgaggagta agagcccaga cgagaggaag gcaggctgga tctttgcctt gagagctccg	3120
tgtcaccagg atggaagggg gtgcctctcg gaggagcctg tgtccacctc cagtctcggc	3180
tttccccggg gggccaagcg cactgggctg ccgtctgtcc ccagctcccg tggccacaca	3240
gctatctgga ggctttgcag ggagtcgtgg gttctcgcac ctgctcagcc ctgtgtcggc	3300
ttcctgtgtg ctcacctaaa gctgtgggtt tgctgtgttc acttcgattt ttctggctctg	3360
tggagaaact gtgaattgga gaaatggagc tctgtggctt cccacccaaa ccttctcagt	3420

ccagctggag gctggagggg gacacaggcc ccaccagca gactgagggg cagaggcaca	3480
ggtgggaggg cagcggagat cagcgtggac aggagcgatg cactttgtag atgctgtggc	3540
tttgtgttgc gttttgtgtc tctgttgac agatctgttt tttcacactg atccgtattc	3600
ccctgggtgt gcacacaggg cgggtgtggg gcatttaggc catgctgtgc tctacttcat	3660
tgagtaaaat cgagtgagag gttccgggca gcaggatcga cgcccagtcc agccggcaga	3720
gggaacacac gggtccttca ttgtcctgta aggggtgtga agatgctccc tggcgcccc	3780
caagcagact agatgggagg aggcgccgct cagcccctca ccctgcatca ctgaagagcg	3840
gcgcctctgc agcaagcagg gcttcaggag gtgcccgctg gccacagcca ggttttccct	3900
aagaagatgt tattttgttg ggttttgttc cccctccatc tcgattctcg taccctaacta	3960
aaaaaaaaa aaaaaaaaaa aa	3982

<210> 51

<211> 2640

<212> DNA

<213> homo sapiens

<400> 51

acggtttttt tttttttttt tttttttttt tttttttttt tttttttttt ttttataaaa	60
ttattagtat aaaaggggaa atgctaccat tcgctcctca ggacgagccc tgggaccgag	120
aaatggaagt gttcagcggc ggcggcgca gcagcggcga ggtaaagtgt cttaaaatgg	180
ttgatgagcc aatggaagag ggagaagcag attcctgtca tgatgaagga gttgttaaag	240
aaatccctat tactcatcat gttaaggaag gctatgagaa agcagatcct gcacagtttg	300

agttgctcaa ggttcttggt caggggtcat ttggaaaggt ttttcttggt agaaagaaga	360
ccggtcctga tgctgggcag ctctatgcaa tgaaggtggt aaaaaaagcc tctttaaaag	420
ttcgagacag agttcggaca aagatggaga gggatatact ggtggaagta aatcatccat	480
ttattgtcaa attgcactat gcctttcaga ctgaaggga actgtactta atactggatt	540
ttctcagggg aggagatggt ttcacaagat tatccaaaga ggttctgttt acagaggaag	600
atgtgaaatt ctacctgca gaactggccc ttgctttgga tcatctgcac caattaggaa	660
ttgtttatag agacctgaag ccagaaaaca ttttgcttga tgaaatagga catatcaa	720
taacagatTT tggactcagc aaggagtcag tagatcaaga aaagaaggct tactcatttt	780
gtggtacagt agagtatatg gctcctgaag tagtaaata gagaggccat tcccagagt	840
ctgattggtg gtcatatggt gttcttatgt ttgaaatgct tactggtact ctgccatttc	900
aaggtaaaga cagaaatgag accatgaata tgatattaaa agcaaaactt ggaatgcctc	960
aatttcttag tgctgaagca caaagtcttc taaggatggt attcaaaagg aatccagcaa	1020
atagattggg atcagaagga gttgaagaaa tcaaaagaca tctgtttttt gcaaatattg	1080
actgggataa attatataaa agagaagttc aacctcctt caaacctgct tctggaaaac	1140
cagatgatac tttttgtttt gatcctgaat ttactgcaa aacacctaaa gattctcccg	1200
gtttgccagc cagtgc aaat gctcatcagc tcttcaaagg attcagcttt gttgcaactt	1260
ctattgcaga agaataataaa atcactccta tcacaagtgc aaatgtatta ccaattgttc	1320
agataaatgg aaatgctgca caatttggtg aagtatatga attgaaggag gatattggtg	1380
ttggctccta ctctgtttgc aagcgatgca tacatgcaac taccaacatg gaatttgcag	1440

tgaagatcat tgacaaaagt aagcgagacc cttcagaaga gattgaaata ttgatgcgct	1500
atggacaaca tcccaacatt attactttga aggatgtctt tgatgatggg agatatgttt	1560
accttggttac ggatttaatg aaaggaggag agttacttga ccgtattctc aaacaaaaat	1620
gtttctcgga acgggagggt agtgatatac tatatgtaat aagtaagaca gttgactatc	1680
ttcattgtca aggagttggt catcgtgatc ttaaacctag taatatTTTA tacatggatg	1740
aatcagccag tgcagattca atcaggatat gtgattttgg gtttgcaaaa caacttcgag	1800
gagaaaaatgg acttctctta actccatgct aactgcaaa ctttggtgca cctgagggtc	1860
ttatgcaaca gggatatgat gctgcttggt atatctggag tttaggagtc cttttttaca	1920
caatgttggc tggctacact ccatttgcta atggcccaa tgatactcct gaagagatac	1980
tgctgcgtat aggcaatgga aaattctctt tgagtgggtg aaactgggac aatatttcag	2040
acggagcaaa ggatttgctt tcccatatgc ttcatatgga cccacatcag cgtatactg	2100
ctgaacaaat attaaagcac tcatggataa ctcacagaga ccagttgcca aatgatcagc	2160
caaagagaaa tgatgtgtca catgttggtt agggagcaat ggttgcaaca tactctgccc	2220
tgactcacia gacctttcaa ccagtcctag agcctgtagc tgcttcaagc ttagcccagc	2280
gacggagcat gaaaaagcga acatcaactg gcctgtaaga tttgtggtgt tcctaggcca	2340
aactggatga agatgaaatt aaatgtgtgg cttttttcct attcctatca aaggcatcgt	2400
tgtctgctaa attacttgaa tattaagtaa tattaaatcc ccatttttag gggaagtgag	2460
atttaaaaaa ccattcacag gtccacaata ttcatactat gtgtttgcag tagtgttcaa	2520
gtgtttatTTT aagcatataa ttggtgtcca ccaggtcctc acaacttctc tgacacaaag	2580

cttctaaaat tcctttcaaa taaagttact ttaatattta aaaaaaaaaa aaaaaaaaaa 2640